MARCH - APRIL, 1963 VOL. 10, No. 2

THE DAIRYFARMING DIGEST

THE VICTORIAN DEPARTMENT OF AGRICULTURE

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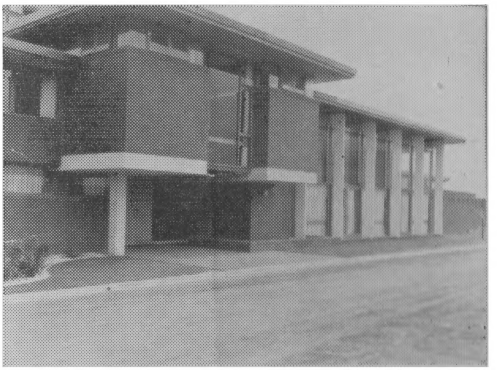

DEAKIN HALL, Monash University, Clayton, was the venue for an Australian-wide Conference on Machine Milking last February.

This was arranged jointly by the Victorian Department of Agriculture and the Dairy Husbandry Research Foundation of the University of Sydney.

The 140 delegates, 61 of whom were in residence, represented Departments of Agriculture, Universities, milking machine manufacturers and distributors, allied industries concerned with detergents, rubberware and plastics, dairy factories, milking machine testing and repair services, and farmers' organisations.

They came from all States, and from Papua-New Guinea, U.S.A., New Zealand and Korea.

The 38 prepared papers and the discussions which followed them covered a wide range of topics and, in doing so, brought to notice many new developments, some of which were demonstrated to groups during the conference.

Full Proceedings will be published later.

COVER: Dr. W. G. Whittlestone demonstrates the action of a pulsator choke to a group at the Conference on Machine Milking held last February.

The Dairyfarming Digest

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OEDEMA DISEASE
Threat to Weaner Pigs

by R. P. HERD, B.V.Sc., Veterinary Officer, Benalla

The glamor disease of pigs in the last year has been swine fever, always hogging the headlines and indirectly affecting many interstate travellers.

But back on the farm, behind the spotlight, another disease has been quietly taking its toll of weaner pigs and almost passing unnoticed.

This is oedema disease, which strikes suddenly and then just as suddenly disappears. It gets its name from the oedema which is sometimes seen on post mortem.

This disease does not follow the pattern of an infectious disease, as affected pigs may be scattered from pen to pen and it is not always pigs in the same pen which become sick.

Deaths occur under a wide range of husbandry conditions and there is no common factor in feeding or management practices on affected properties.

Fast growing weaners are the pigs most commonly affected, and 90 per cent of cases occur in 8 to 10 week old pigs in the immediate post-weaning period.

Often a pig will be in perfect health when fed at night and next morning will be found dead. Death frequently occurs so quickly that symptoms will not be seen, or death will occur in 48 hours. Occasionally a pig will survive longer and in some cases complete recovery will occur.

Symptoms include loss of appetite, scouring or constipation, weakness and inco-ordination, paralysis of front and hind legs, muscle tremors, coma or convulsions.

Effective treatment and prevention cannot be developed until knowledge of this disease is complete, but pig owners can do three things which may be of benefit —

- *Drench affected pigs with epsom salts.*
- *Treat all weaners with Terramycin soluble powder.*
- *Reduce or withold all feed for a few days.*

Research workers in Britain are working on a vaccine for this disease and it is hoped that this will provide an effective means of prevention in the future. §

THE ANGLE PARKED MILKING SHED

by T. H. WILSON, Dairy Supervisor, Bendigo

Although most farmers favor the walk through milking shed which has been in use with only slight modification for many years, or the herringbone which has become popular since 1955, a few farmers feel that neither of these types fits their ideal of what a milking shed should be. Hence we have farmers, relatively few in number, who use other types such as the tandem, the race, or the follow-through.

ANOTHER TYPE OF MILKING SHED which appears to have possibilities is the angle parked shed of which as far as is known, none have yet been erected in Victoria. At least one is in use in New Zealand.

This shed consists of single bails set at an angle in a similar manner to motor cars angle parked at a roadside. Each cow can enter and leave the bails individually and a set of milking machine teat cups is provided for each bail.

The cows enter the bails from the back and leave through a gate at the front. A chain can be placed across the back of each bail if required to hold the cows in.

As far as is known, no time and motion studies have been made of this type of milking shed working under practical conditions, but the theory of operation is interesting.

- *If the time taken to change cows in one bail is 20 seconds,*
- *and the time taken to wash and stimulate a cow is 40 seconds.*
- *and the average cow milks out in 5 minutes,*
- *then the time taken for a complete cycle of operations in one bail is 6 minutes, which would give a throughput of 10 cows a bail an hour.*
- *As the time taken to change cows and apply the teat cups at each bail is one minute and the operator then has 5 minutes before he must return to that bail, he can theoretically look after 6 bails, which gives a speed of 60 cows an operator an hour.*

Certainly the speed at which cows can be put through the milking shed does not necessarily indicate efficient milking, but it seems possible that in the angle parked shed, the cows could be put through somewhat faster than in an equivalent walk-through shed without sacrificing anything in the way of individual attention, whilst at

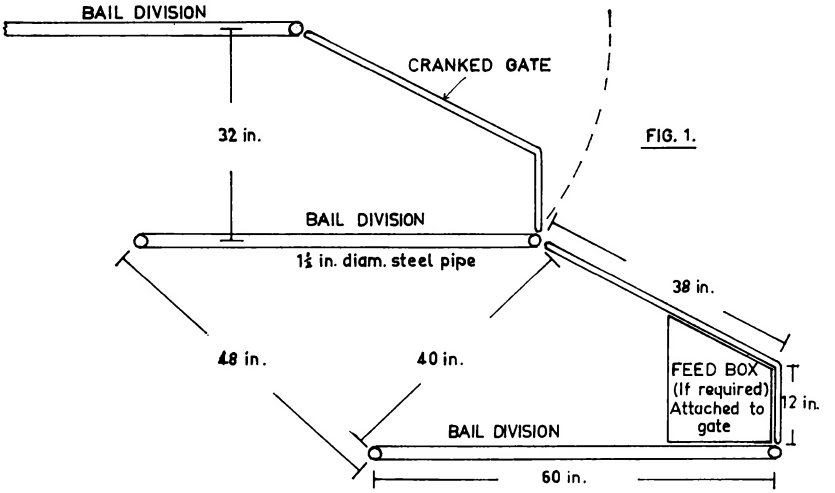

BAIL DIVISION
CRANKED GATE
32 in.
BAIL DIVISION
1¼ in. diam. steel pipe
38 in.
48 in.
40 in.
FEED BOX
(If required)
Attached to
gate
12 in.
BAIL DIVISION
60 in.

FIG. 1.

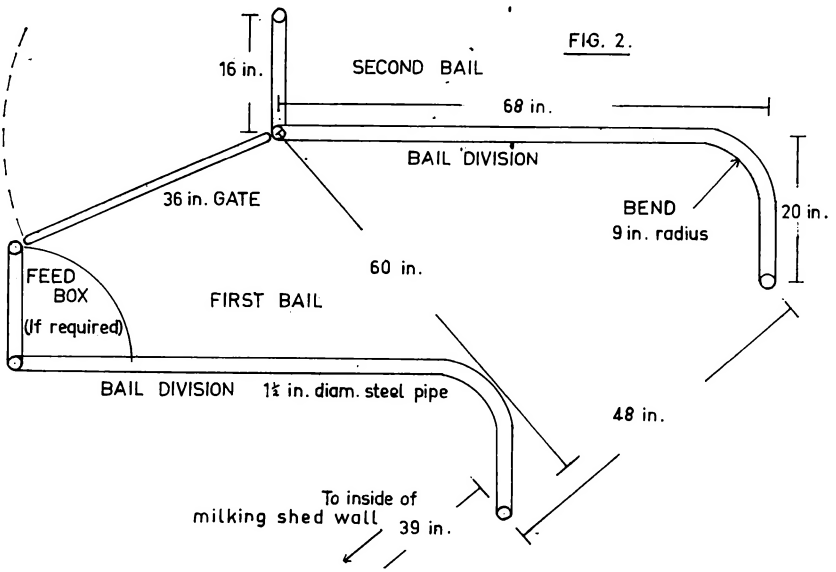

16 in.
SECOND BAIL
68 in.
BAIL DIVISION
36 in. GATE
BEND
9 in. radius
20 in.
60 in.
FEED
BOX
(If required)
FIRST BAIL
BAIL DIVISION 1¼ in. diam. steel pipe
48 in.
To inside of
milking shed wall
39 in.

FIG. 2.

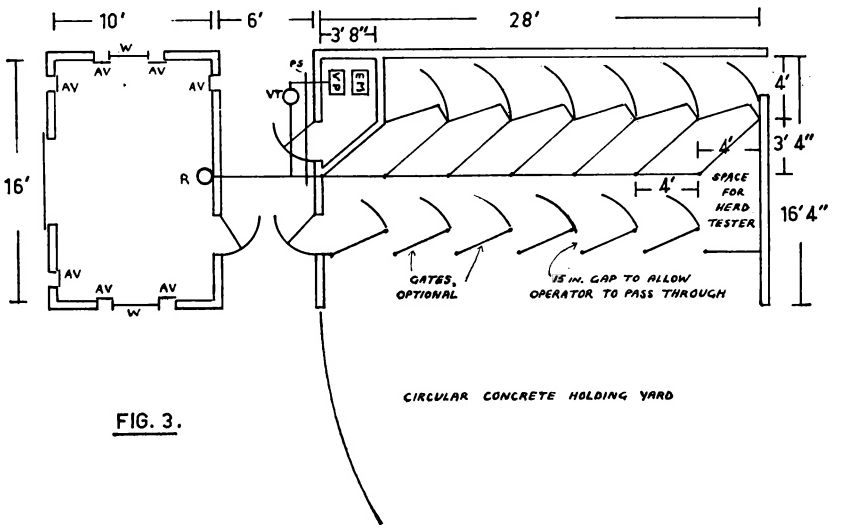


FIG. 3.

the same time, the cows could be given better attention than is perhaps possible in a herringbone without being very much slower.

The distance walked by the operator in an angle parked shed would probably be greater than in an equivalent herringbone, but possibly less than in an equivalent walk through. The cows in an angle parked shed could not be elevated, or at least not more than about 10 inches.

Figures 1 and 2 illustrate two possible types of bail designs. Various features of these two designs can be combined to give a variety of alternative types.

Figure 3 illustrates the general shed layout.

In figure 1 a cranked exit gate is shown. A straight gate could be used, but in this case, the bail divisions would probably need to be about 6 in. longer than shown.

Figure 2 shows the bail division returned behind the cow. The objects of this are:—

- To prevent the cow backing straight out of the bail if a breech chain is not in use.
- So that a sheet of flat steel can be attached to this end of the bail division to prevent dung or urine from one cow splashing onto an operator working at an adjoining cow.

The measurements given are for bails which will take cows of any size up to 8 ft 6 in. long and 2 ft 6 in. wide. Very few cows will be encountered which are larger than this. Where herds which consist entirely of Jerseys are milked, the bail divisions could be made 12 inches

shorter than those shown and the width reduced by 3 inches. Dimensions for these bails have been worked out theoretically. They have yet to be tried in practice.

One point that should be borne in mind by any farmer who proposes to make this type of bail is that the bails can be either left hand or right hand, depending upon the end at which the cows will leave the milking shed. Left hand bails would probably be useless if installed in a milking shed with the exit at the right hand end, and vice versa. §

SIMPLE METHOD OF WEIGHING PIGS

MR. H. A. KEELE of BAMAWM, has designed a simple "crate" for weighing pigs. It is made with 6 in. mesh reinforcing wire, 3 ft wide, as used by builders and concrete workers.

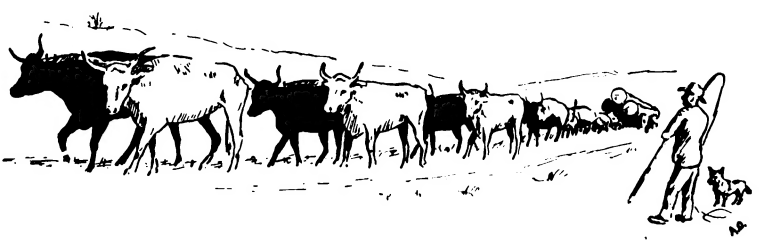
Two pieces, each 3 ft 6 in. long, are laid side by side and joined together to form a folding crate.

A length of chain hangs from the rafters of the pig pen, and is fixed to a long piece of 1 in. piping which acts as a lever when lifting the crate.

The wire crate is placed on the floor of the pen and opened up wide enough for a pig to be driven on to it. The tops of the crate are drawn together and hung on the scales which are suspended from a hook fixed on the end of the lever.

When the lever is pulled down, the crate is raised till the pig's legs, which come through the mesh, are free of the ground.

Weighing takes less than a minute and is over and done with before the pig has had time to get excited.



NEW ALTERNATIVE TO CATTLE GRID

The British "Farmer and Stockbreeder" for July 3, 1962, reports that a new type of self-closing electric gate may soon be on the market.

It consists of two hinged rods (one on each gate post) made from glass fibre and covered with a conductive material. It is connected to the normal fencer unit and is opened on impact. No shocks are sustained when driving through with a rubber-tyred vehicle. §

CONTROL OF MUD ON DAIRY FARMS

by G. A. MORTIMER, Dairy Supervisor, Wonthaggi

MUD CAN CAUSE MUCH LOSS ON DAIRY FARMS. Time can be lost in washing the cows' udders and legs. Valuable grazing can be lost when pastures are fouled with mud. Also, footrot organisms breed in mud, and outbreaks of mastitis are often associated with muddy conditions.

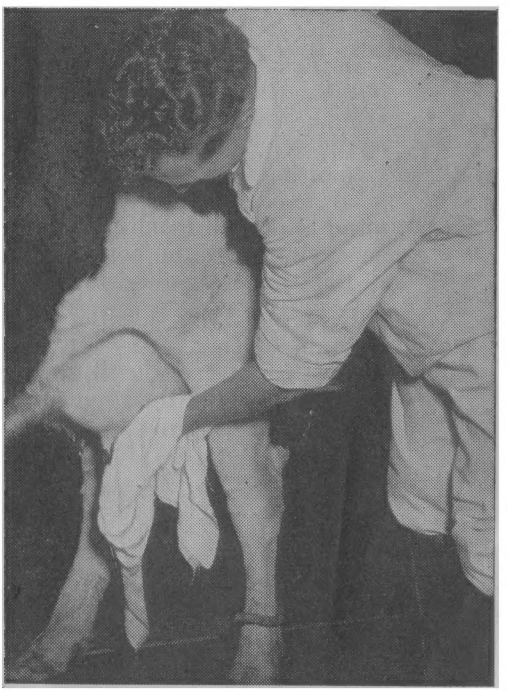
Production of clean milk is extremely difficult if cows have to wade through deep mud twice daily on their way to the shed.

When giving thought to the layout of the dairy farm, much time should be spent in planning the position of paddock fences, shed drains and more particularly the site of the dairy buildings; the correct placing of all these will greatly improve working conditions. An aerial photograph of the farm is a useful aid in planning.

If more care had been taken in the selection of the site of the dairy buildings, mud problems on many farms could have been avoided. Admittedly in some cases selection of the best site for the proposed dairy building is not easy.

In hilly country only one site may be available, while in very flat country the need to place the milking shed near the roadside to facilitate tanker collection may restrict the choice.

There are two chief ways to prevent mud. One is to keep the water away from soil which will be stirred and pounded by cows' hoofs and other traffic. This is done by keeping them to high ground, and by making drains to get the water away.



Under normal milking routine there should be sufficient time to stimulate let-down by about 30 seconds of udder washing for each cow. The presence of mud will waste the milkers' time and help spread mastitis.

The cows should not cross the line of the shed drainage if this can be avoided.

A tractor grader blade can be used to smooth out the surface of tracks and lanes so that there will not be hoof marks to hold water.

The other answer is to use a material that won't mix with water in places where traffic is heavy.

In nearly every case, judicious placing of the concrete around the shed will almost completely eliminate mud. Any farmer intending to build a new shed or alter the old one is advised to consult his district dairy supervisor as to the best placing of the concrete around the shed.

Concrete tracks leading from the milking shed, especially in a formed up laneway, will greatly assist in keeping the mud problem on most farms to a minimum.

It has been found from experience that concrete tracks of a width of 18 inches are wide enough, and they should be constructed so that their surfaces are slightly below ground level, so that water will not be banked up beside them. If this happens it will soften the ground and the tracks will soon break up.

The fact that the tracks are below ground level and become covered with earth does not matter, as the cows soon find the hard surface when the surrounding ground becomes soft and boggy. Even pigs have been seen to keep to a concrete track on a farm in South Gippsland.

Concrete tracks should be at least 3 inches thick, and it is desirable that they should be reinforced with reinforcing rods or old wire netting, the reinforcing material being placed about 1 in. to 1½ in. from the bottom of the concrete.

A well-formed track will help reduce the mud problem where traffic is heavy.

Note how the cows prefer the narrow concrete tracks to wading through the mud on this property.

If the track is on a slope, it can be made slightly concave, and it will then drain the ground around it. Where possible, it should drain back towards the milking shed and link up with the shed and yard drainage system.

In hill country the end of the track may have to be downhill. It is then advisable to fence off the last few feet where the drainage from the track will reach the soil and soften it, so that the stock are compelled to leave the track before they reach the end.

If a long concrete track is to be placed on a formed laneway, it may be put on one side. A second track can then be put down later to make a double track for the farm tractor. Not all mud problems are around the milking shed. On hill farms muddy conditions often prevail in gullies where cows by necessity must cross. Culverts, drain pipes or use of concrete in these situations will greatly assist here.

Where cows have access to dams, mud problems can also occur. It is better, for many reasons, to fence off the dams and pump water for the stock.

Gateways leading off farm tracks often present a serious mud problem; however, again in these cases use of concrete or drain pipe helps.

The best time for action to reduce the mud problem is in the early autumn, before the wet season commences. Your dairy supervisor will gladly help, as required, in planning to beat the mud. §

QUICK IMPLEMENT PICK-UP

A WORTHWHILE DEVICE FOR QUICK IMPLEMENT ATTACHMENT TO THE TRACTOR, INVENTED AND REPORTED ON BY MR. J. A. COCKS, HAURAKI PLAINS, NEW ZEALAND.

ON MOST DAIRY FARMS one tractor is used for a host of different jobs and in the spring it is probably coupled to three or more different implements each day.

With bloat in the offing and spraying a widely accepted method of control, the tractor is hitched regularly to a spray unit.

Once that job is done the tractor is likely to be used for silage making, which may mean use of both forage harvester or mower and buckrake. On top of that not many days pass without the all-purpose carrying tray being used to run out some hay or pick up a calf.

Valuable time can be spent struggling with tractor and implement trying to get them lined up to make a connection. The device reported by Mr. Cocks appears to have much to commend it to busy farmers who make maximum use of the power available to them in their tractors.

The device consists of an A frame attached to, and left on, the tractor's three point linkage, and a matching frame on those implements fairly frequently used.

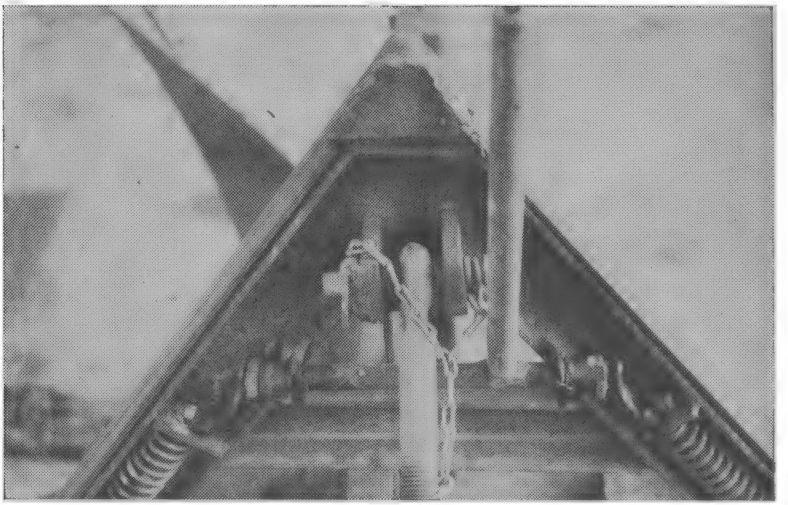
The linkage, with the A frame, is lowered to the right height and the tractor backed in so that the tractor frame fits inside the frame on the implement. Both are then lifted by the hydraulic.

If the P.T.O. is required, the adjustment can be quickly made, though it is of course necessary to get down from the tractor to do this.

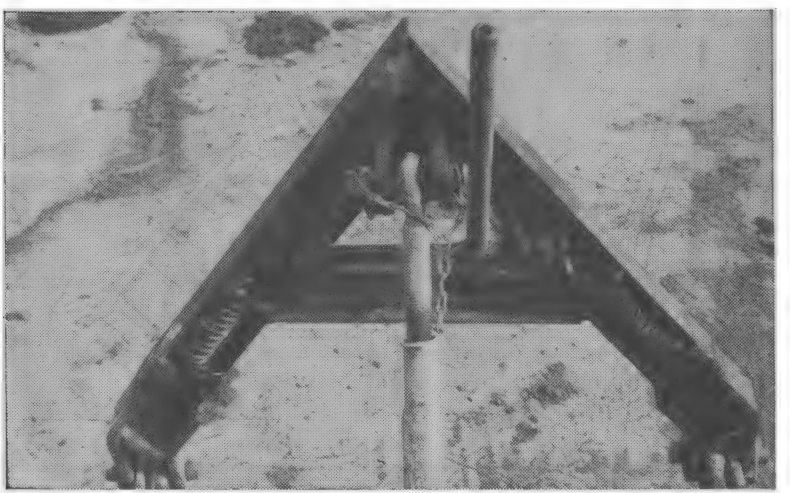
It is also necessary when unhitching to get down to place a chock under the rear of implements that ride flat on the ground to ensure their tilting forward to clear the locking pins.

One of the advantages of this method for those whose backing is not as accurate as Stirling Moss's, or when implements are on uneven ground, is that the two frames do not need to be lined up accurately. Being triangular they pull together when the hydraulic lift takes the weight.

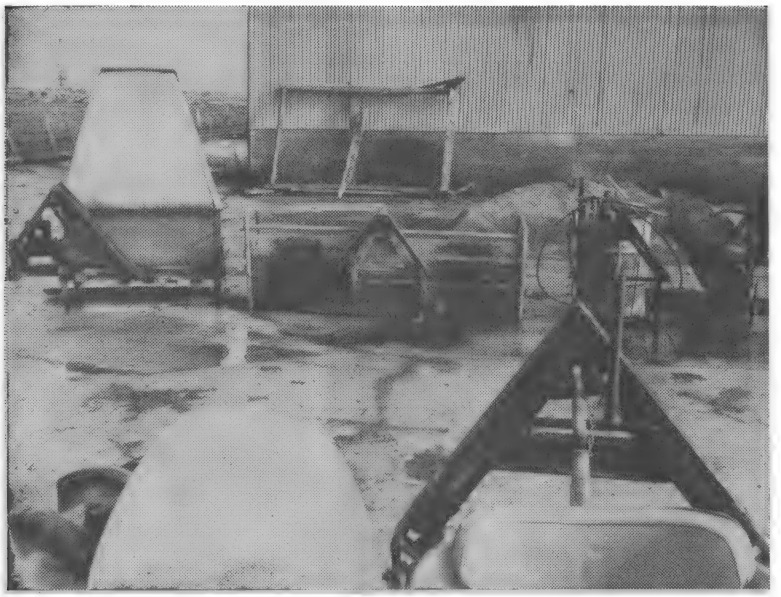
The frames are held by a catch so that dropping an implement is a simple matter of undoing the catch and lowering the hydraulic and then driving off.



The mould-board plough hitched and ready to go. It can be seen how the A-frame on the tractor fits into that of the implement.



The frame as seen from the tractor seat, showing the lever used to lift the locking catches for unhitching.



Four implements lined up, any one of which may be picked up ready to go in 10 seconds, apart from an allowance for connecting the P.T.O. drive where necessary.

Mr. Cocks has fitted frames to his spray outfit, his carrying tray, forage harvester, plough, topping mower, rotary harrow, and calf pen. A buckrake, he believes, might be awkward but not impossible to fit with an A frame.

It was pleasantly easy, he reports, to be able last autumn to come in from ploughing, drop the plough and hitch up to the forage harvester to cut a ration of greenfeed maize, the change over taking about a minute.

(New Zealand Dairy Exporter, September, 1962).

KEEP CALVES AWAY FROM WASTE OIL

A recent post-mortem has revealed that three calves died and several others were made very sick through drinking waste oil from a four gallon drum similar to those used to carry calf feed.

The owner, a South Gippsland farmer, had drained his tractor and left the drum of oil where the calves were able to get at it.

A. W. HUMPHREY, Dairy Supervisor, Foster

USING HERD RECORDING TO BEST ADVANTAGE

by K. M. SILLCOCK, B.Agr.Sc., Senior Dairy Husbandry Officer

At the national level herd recording is the essential basis of our bull proving and artificial breeding schemes.

On the farm its immediate value depends upon the use the farmer makes of his herd production records.

The farmer with a herd average of 240 lb of butterfat a cow may feel that there is a gulf fixed between him and the farmers with 300 lb or 350 lb averages.

But many a testing farmer has bridged this gulf in a very few years and has, at the same time, increased the size of his herd.

Moreover, the records show that those farmers who test their herds continuously show greater progress both in raising average production per cow and in increasing herd size than do those who are intermittently under test.

The really skilled dairy farm manager, who is likely to be attracted to continuous testing, views his herd as a link in his production sequence. Its function is to convert, as cheaply and completely as possible, feed in the paddock into milk of good quality and composition in the vat. He aims to make his herd an efficient instrument for doing this not only for one year but over a long time.

The herd, of course, consists not only of milking cows but of all the dairy stock on the farm; therefore, the efficiency with which the grazed feed is converted into milk depends not only on the production per milking cow but also on the proportion of producing to non-productive animals on the farm.

WHY CONTINUOUS TESTING PAYS

It may be said, *"Why not save the cost of testing, since genetic improvement is so slow, and just simply use good bulls, feed the herd well and make sure the milking is done properly with a well adjusted machine and that everything is done to keep the stock healthy? If these things are done and the pastures are stocked as heavily as safety will permit, with hay and silage put by as an insurance against a poor season, will not this*

The immediate value of herd recording depends upon the use the farmer makes of his herd production records.

ensure maximum conversion of farm feed into milk?"

This type of reasoning is based on the assumption that where the herd is not tested the genetic level of its members will stay put. But, since even a mating of known superior stock can produce an inferior offspring, it is much more likely that the herd average will slip back when the farmer lacks evidence on which to base his culling and selection of stock.

Furthermore, the non-testing farmer is apt to overrate his ability to judge whether his herd is being adequately fed. His factory returns will show him the general trend in production, but they do not tell him very precisely whether a decline in production is due mainly to those cows which are nearing the end of their lactations or whether it is a general falling off of the whole herd owing to failure to fill a seasonal feed gap.

Nor does it tell him whether the later-calved cows are letting him down, or whether the fault lies with cows which have developed erratic let-downs or which have an udder structure which tends to prevent the machine from getting all their milk.

The testing farmer has a monthly check on each cow. If he is a keen observer, even an undue disparity between even-

ing and morning milk weights for a cow on testing day will warn him that not all is well.

Knowledge of each cow's current performance might also lead to more economical use of a special feed, whether bought or farm-grown, since it can be reserved solely for those cows which can put it to good use at the time.

CULLING ON PRODUCTION FIGURES

If a farmer should have some scope left for culling according to production after he has made good the cow wastage from other causes, at what level of production should he consider that a cow merits culling and replacement?

The answer depends partly on the feed supplies. On a farm where feed is abundant and would support a larger herd it would pay to keep even a very low producer at least through the spring unless the herd is already too big for the available labor to handle.

On any farm it is doubtful economy to cull a moderate producer, calved at the normal time for the district, in the first 90 days of lactation merely to avoid "spoiling the herd average," since she will produce some milk from grass which would otherwise remain unused.

Also, it might be poor economy to replace a moderate cow calving at the normal time with a genetically superior one calving, say, in September or October, as late calving can markedly reduce the cow's yield for the season.

Milk from an older cow is cheaper than that from a young one. Let us consider a cow with a 240 lb butterfat production just beginning her third lactation. If still producing at the same rate in successive years, she will have produced a further 960 lb butterfat by the end of her sixth lactation, that is, in another four years.

Suppose, instead, we replace her now with a heifer which

Knowledge of each cow's current performance might also lead to more economical use of a special feed, whether bought or farm-grown.

would be worth £40 on the present market, as against, say, £20 for the cull cow. Over the four years that heifer would have to produce at least an average of 262 lb butterfat per year to make good the loss sustained by selling the cow instead of the heifer. In addition, by making the change we compel ourselves to rear two heifers instead of one during an eight year period.

The feed grazed by the heifer in her first two years of life would be at least half of that required to support a 240 lb producer over one lactation; therefore, the farmer might gain an extra 120 lb butterfat by halving his culling rate, or doubling the life in the herd of this particular cow.

It is clear that culling for productivity will pay only if the replacements are very substantially better than the cows which are culled.

MILKING CHARACTERISTICS

Where one or two people milk a large herd it is important to have cows which fit in well with the routine and do not cause undue delays or upsets.

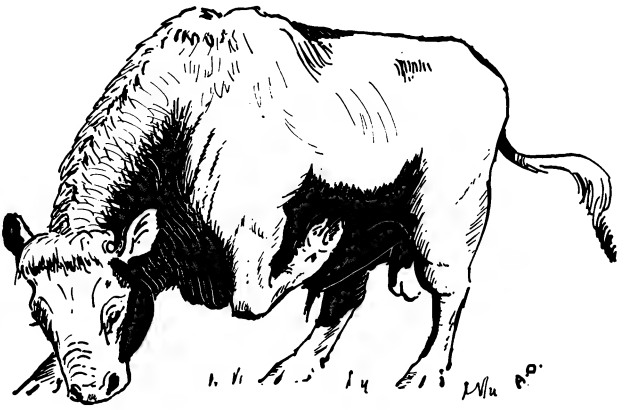
Some time in the future the herd recorder might measure not only the production of the cows but also their rate of milking. This measurement could become a specially valuable part of the assessment of daughters of a bull used for artificial breeding.

In the absence of a measuring device, the farmer who takes pains to know his cows will know those which let down milk readily and milk out completely, those which have second let-downs and erratic milking patterns, those whose udder structure makes much machine stripping necessary, and those which take a long time to milk out. If he breeds his own replacements he will naturally try to select the progeny of those with desirable milking characteristics.

It follows that, should he buy from other herds, he should go to those which are milked and fed in much the same way as are his own. If he has developed a fast routine in a herringbone shed with a herd feeding mainly on pasture, he may be very disappointed with cows from a small, lavishly fed herd which is laboriously hand stripped after machines, even if the cows have high production figures under those conditions.

It is possible that the man who selects for high production in his own herd is automatically selecting also for stock which will fit in with his conditions, but it is wiser to take into account all observable data as well as production figures. In practice, the monthly visit of the herd tester will tend to make him more aware of all these characteristics of his cows, especially if he is in the habit of discussing results with the tester at each visit. §

Don't Trust Him!



by A. OLLIER, Dairy Husbandry Branch

When asked what he considered to be the most dangerous animal, a famous big-game hunter once replied, "A Jersey bull".

Except for a few remarkable characters like Mr. and Mrs. George Adamson, who figure in the book "Born Free", nobody would dream of trusting a dangerous wild animal under any circumstances.

Because he is one of the domesticated animals, a bull of any breed is looked upon as "tame," and in consequence caution is very often relaxed when dealing with him.

During the past few years almost all the serious accidents in which bulls were involved, were caused by "quiet" animals, and dehorned ones at that.

The Jersey has always had a bad reputation for moodiness, but some "quiet" bulls of other breeds are not far behind in this respect.

MATING PEN IS ONE OF THE ANSWERS

There is little risk to the farmer when introducing a dangerous bull into a yard where a cow has been held, but when they have to be separated the

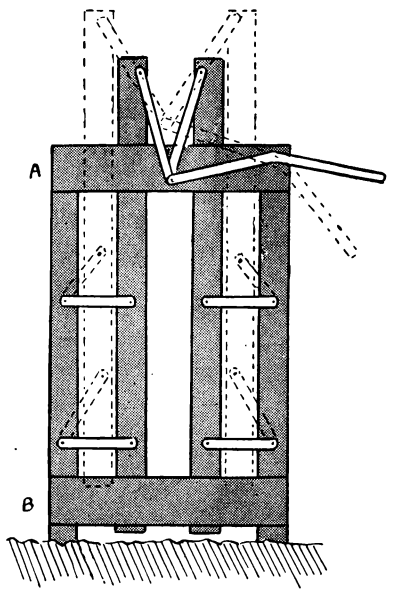


FIG. 1. In this American dehorning bail, all metal work except the operating lever, is repeated on the other side of the woodwork.

bull resents this interference and is likely to attack. It is not always easy to separate the animals by shutting a 10 ft gate in an eager bull's face.

Mr. Lou Stewart of Pakenham uses a mating crush specially designed for a bad-tempered bull. In the picture he is shown releasing the cow and waiting to slide the two bars across to block the bull.

To save expense and unnecessary duplication, the mating pen can be incorporated with the dehorning crush, provided that the latter is wide enough for both purposes. If the section containing the yoke or headlock is hinged to one post it can be opened to release the cow.

In the diagram (Fig. 1) which was copied from "Hoard's Dairyman," the headlock structure is a fixture but it can be made to open by hingeing at points A and B. When used as a fixture, a side gate, hinged to a post against the cow's rump, would be necessary.

Fig. 2 which shows a similar type of headlock is reproduced from a pamphlet on "Cattle Yards and Crushes" by A. C. T. Hewitt, M.Agr.Sc. The pamphlet may be obtained free of charge from the Department of Agriculture. §

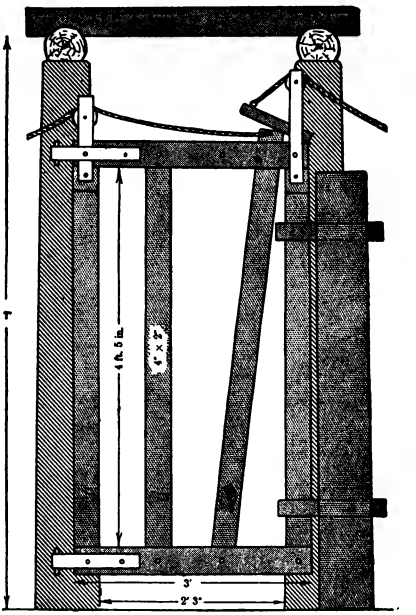


FIG. 2. This bail, also, can be hinged to open, or used as a fixture in conjunction with a "side-gate" to release the cow.

THE MANAGEMENT OF PASPALUM PASTURES

by A. MORGAN, B.Agr.Sc., Senior Irrigation Officer

Paspalum dilatatum is a valuable pasture species when planted in the right situations and kept under control.

Its advantages are tolerance to wetness, drought resistance due to its deep-rooting habit, capacity to form a solid turf which will stand grazing by cattle without surface pugging, rapid growth in its season, and good fodder value when not allowed to grow past its best stage.

DISADVANTAGES include a tendency to get root bound; prevalence of an ergot disease after flowering which affects cattle adversely, and susceptibility to frost.

It grows too rank and fibrous if left ungrazed for any lengthy period. Hard and frequent grazing is the obvious key to its management.

If carried to extremes, this will tend to eliminate any perennial clover growing in association with it, but it must be remembered that if the paspalum is not kept chewed back it will eliminate the clover by shading it out.

Where the paspalum gets away in spite of repeated grazings, the mower, the rotary slasher or the forage harvester should be brought in to keep it down. It can be made into choice hay if it is cut before the grass has passed its prime.

The problem of root bound paspalum can be met by discreet rotary hoeing or other cultivation. The use of the rotary hoe is advised, however, because a very good job can be done with this machine, taking it in successive two inch deep cuts.

The resultant ground is usable at once and species such as perennial rye grass, white clover and strawberry clover can be introduced to produce a very attractive sward.

As a long term management procedure, increase in superphosphate topdressing will pay well by encouraging better clover growth, but it must be accompanied by the grazing and/or topping treatment to give the best results.

Paspalum is usually regarded as being more suitable for flat wet areas, but there are many farms where it could be used to advantage, owing to its deep rooting and drought resistant qualities, to supply a green pick on some of the higher paddocks in the summer.

Under irrigation where water rights are restricted, it can be used very successfully in a mixture with perennial ryegrass and white or strawberry clover. If the soil is good enough, a little lucerne can also be included in this mixture.

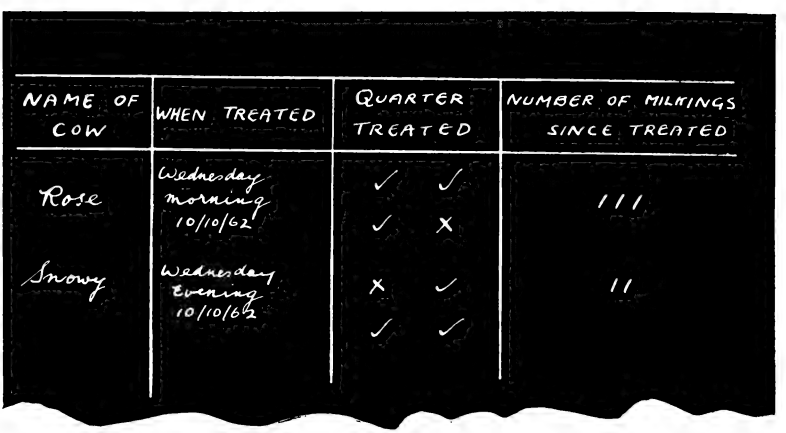
Paspalum seed can be planted with the mixture in either autumn or spring, but will seldom be seen as a seedling until about Christmas. Its development from then on is slow but sure. §

MASTITIS TREATMENT CHART

by R. W. D. CLULOW, Dairy Supervisor, Trafalgar

MR. A. R. BILSTON, of TRAFALGAR, uses a blackboard on which to record details of treatment given to cows with mastitis.

In the example shown below, a cross indicates the quarter treated. Sound quarters are shown by a tick. On the chart, the LOWER pair of quarters of each cow are those at the rear of the udder. Records shown are up to date for Thursday evening October 11.



Laboratory aid is necessary to make a diagnosis with some diseases.

OBSERVANT STOCKOWNERS CAN HELP DIAGNOSIS

by J. ECKEL, B.V.Sc., Veterinary Officer, Ballarat

STOCKOWNERS can save themselves a good deal of anxiety, and the veterinary officer much time and work, by making careful observations on their sick animals.

As losses of livestock are inevitable, a few hints on what owners can do to help the veterinary officer reach an accurate diagnosis quickly, are worth mentioning.

Though much information can be obtained from post-mortems, a great deal can be learnt from the history of an outbreak.

An owner who is having deaths in his flock or herd should be able to give details along the following lines:—

- *Breed, sex and age of animals concerned.*
- *Number of animals concerned.*
- *Number of animals which became sick or died.*
- *Over what period were they affected?*
- *Did sickness and death occur suddenly?*

ANY SPECIAL FEATURES NOTED IN THE LIVE ANIMAL

Loss of appetite.
Any scours or impaction.
Any alteration in breathing.
Any cough.
Any discharge from nose, anus or mouth.
Any lumps or swellings on the body. Soft or hard. Movable or fixed.
Muzzle — wet or dry.
Coat — shiny or dry and harsh.

FEEDING BEFORE SICKNESS

Type of feed.
Stage of growth.
Any recent change of feed.
How soon after change before sickness commenced.
Symptoms noticed.

WATER

Fresh, e.g. from dams, springs, creek or swamps.
Bore — salty or brackish.

ANY SPECIAL FEATURES IN THE DEAD ANIMAL

Position in which body found.
Any evidence of struggling.
Any blood at nostrils or anus.
Rate of decomposition of carcase.

ANY TREATMENTS GIVEN

If any treatments were given, the details should be known.

LABORATORY AID OFTEN NECESSARY

Even after a post-mortem, the veterinary officer often sends specimens to the laboratory to confirm the diagnosis.

Wherever possible, it is always advisable to have your stock problems investigated on your farm by a veterinary surgeon.

However sometimes where this is impossible, the owner may send specimens to the laboratory himself.

MANURE SAMPLES

To be tested for worms or fluke.
Send enough to nearly fill a tobacco tin.

MILK SAMPLES

For testing for mastitis.
At least 2 oz. of milk to be sent in a bottle which has been previously boiled for five to ten minutes.

BLOOD SAMPLES

To diagnose contagious abortion. One dessertspoonful or more of blood, collected in a bottle which has been boiled for five to ten minutes. The bottle must be completely dried out in the oven before it is used for collecting blood.

LIVE ANIMALS SOMETIMES SENT TO THE LABORATORY

POULTRY

Diagnosis of certain poultry diseases which affect the eyes, nasal passages, throat and windpipe can only be obtained by transmission of diseases to healthy birds, e.g. infectious laryngo-tracheitis and fowl pox. At least three live typical specimens are essential for a correct diagnosis.

SHEEP

On some occasions if you are unable to obtain the services of your veterinary officer or practitioner to investigate your sheep losses, it may be possible for you to take one or two sick sheep straight to the laboratory.

WHERE TO SEND SPECIMENS

All specimens whether live or dead should be submitted to the following addresses:—

BY RAIL:

Address to—
The Director,
Veterinary Research Institute,
c/o Spencer St. Railway Station,
Melbourne.

BY POST OR DELIVERY:

The Director,
Veterinary Research Institute,
Story Street,
Parkville, N.2.

Delays and sometimes losses of specimens are due to incorrect addresses being given. These can be costly to the person concerned.

When you send specimens, make sure you include your name and address. Also ring or write to the laboratory to notify that you have sent specimens and to supply details of the deaths.

The picture at the top shows how a blood sample is collected from the tail of a cow.

Below: A veterinary surgeon is often able to make a diagnosis after carrying out a post mortem.

THE WRIGHT RAIN IRRIGATION INDICATOR

An evaporation measuring device for control of spray irrigation

by L. F. BARTELS, M.Agr.Sc., Irrigation Research Officer

Scientists in recent years have paid increasing attention to the manner in which crops lose water to the atmosphere.

It is now known that water loss by plants is caused mainly by the direct absorption of heat radiation from the sun. Absorption of heat from the air has a much smaller effect. The possibility of using evaporimeters of various types to indicate water loss by crops has been examined since these instruments respond mainly to radiant heat.

This article discusses one such instrument, the Wright Rain Irrigation Indicator, designed for spray irrigators.

But first a few words about water storage in soil, so that the principle on which the device operates can be more clearly understood.

SOIL MOISTURE DEFICIT

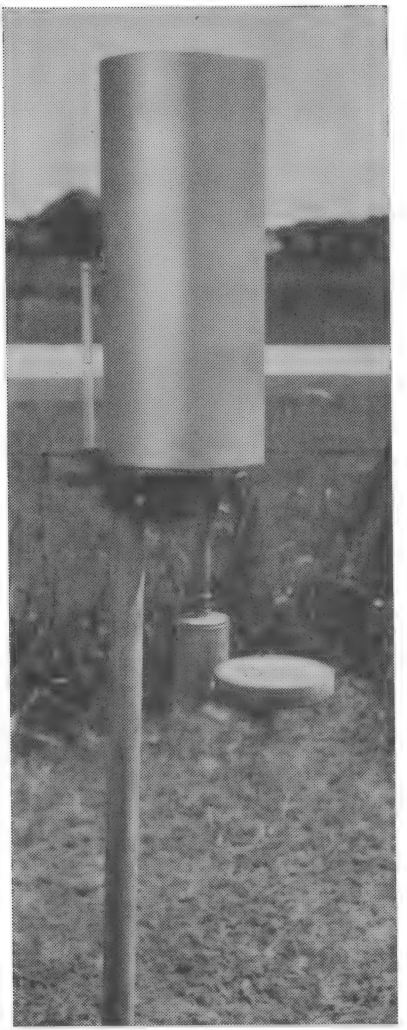
If a soil is heavily irrigated, and then covered with a tarpaulin to prevent evaporation, excess water drains away within one or two days and the amount of water then retained by the soil becomes virtually constant. The equivalent surface depth of water stored in the plant root zone at this stage is termed the "field capacity."

Plants are generally considered to grow best when the soil moisture content is at or about field capacity.

A soil drier than field capacity is in a sense deficient in water, and the term "moisture deficit" is used to describe the amount of water needed to return the soil to field capacity.

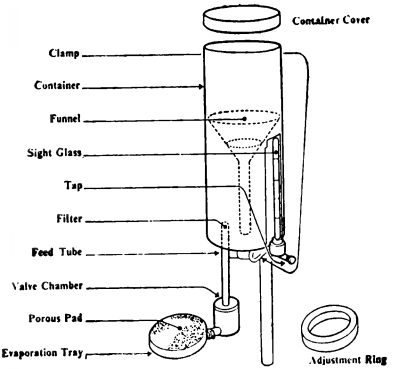
If the moisture deficit is allowed to become too great, meaning if the soil is allowed to become too dry, plants wilt from lack of water. The quantity of water still held by a given soil when this happens is referred to as the "wilting point."

For perennial pasture growing on Werribee loam the root zone is two feet deep. At field capacity this depth of soil holds moisture equivalent to 8 surface inches of water, and at wilting point it holds 5 surface



The Wright Rain Irrigation Indicator.

inches of water. We can say therefore that the maximum moisture deficit allowable for perennial pasture on this soil is three inches of water.



A diagram of the Wright Rain Irrigation Indicator.

BASIS FOR EVAPORATIVE IRRIGATION CONTROL

Some workers claim that, provided the crop completely covers the soil, water loss at moisture contents between field capacity and wilting point depends on evaporative conditions only, and is independent of the height of the crop and the soil moisture content. If this is so, then the water loss from a suitable evaporimeter would be a direct measure of water use by the crop.

While later work has shown these claims to be only partly correct, many trials have shown that evaporation measurements can be used to control irrigation in the field.

THE IRRIGATION INDICATOR

The irrigation indicator, shown in the diagram and the picture, is manufactured by Messrs. Wright Rain Ltd., of Ringwood, Hampshire, England, to a specification supplied by

the National Vegetable Research Station at Wellesbourne, England.

The instrument consists of a rain gauge and an evaporimeter combined in such a way that the amount of water lost by evaporation, over periods of a week or more, corresponds to the amount evaporated by a short pasture watered every day.

It is claimed by the manufacturers that the drop of water level in the tank, measured in the sight glass at the side, is a direct measure of the soil moisture deficit, that is, it shows how much water the soil needs at any time to bring it back to field capacity.

In actual fact the irrigation indicator measures potential or maximum water loss, and application of the quantity of water indicated is only necessary in the case of frequently watered crops such as tomatoes.

For crops such as perennial pasture, which can be allowed to dry the soil appreciably before needing water, the irrigation indicator overestimates the amount of water needed to wet the soil again to field capacity. Measurement on Werribee loam shows that a more appropriate application would be 70 to 80 p.c. of the indicated deficit.

If the drying power of the air remains steady, the soil dries much more slowly as wilting point is approached. It is not advisable therefore, to use the indicator where the tank deficit at irrigation is likely to exceed four inches.

FIELD STUDIES

Experience at Werribee over two irrigation seasons indicates that the device can be successfully used for irrigation control. In this case the plots were FLOOD IRRIGATED, and maximum pasture yields were obtained by irrigating at an average tank deficit of 2.34 inches.

The corresponding average water intake at irrigation was 2.56 inches, of which between 0.30 and 0.40 inch was lost by penetration beyond the plant root zone.

INDICATOR MAINTENANCE

The manufacturer states that several faults noted with the instrument are to be rectified in future production.

The worst fault was blockage of the filter gauge on the feed tube by a jelly-like product of metallic corrosion, leading to reduced readings. This may be countered by using only rain water when refilling the gauge after irrigation, and by coating the inside of the tank with an anti-corrosive paint.

The other major problem has been a tendency for the needle of the float valve to stick, lead-

(Continued on page 28)

COWS NEED PLENTY OF WATER

by G. A. MEIN, B.Agr.Sc., Assistant Dairy Husbandry Officer

AN ABUNDANT SUPPLY OF CLEAN DRINKING WATER available to dairy cows at all times is fundamental to good dairyfarming.

Cows in milk need more water in proportion to their size than any other farm animal.

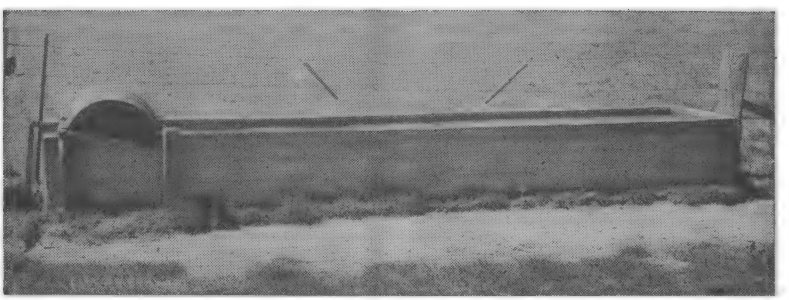
Obviously daily needs vary tremendously with individual size, production capacity, kind of fodder eaten and climatic variations of temperature, wind and humidity. Daily consumption is usually 10 to 20 gallons a cow but may vary from 4 to 25 gallons.

All feeds contain some water and can supply part of the total requirement but the rest must be supplied by drinking water. Cows may thrive for months in cool weather on lush pasture wet with dew without actually drinking more than a few gallons of additional water per day.

However, in summer the feed is usually dry, dews are less frequent, days are hotter and the humidity is down. Everything works against the dairy cow — her water needs are greater when there is least water naturally available.

Water needs are not the same as the amount a cow is prepared to drink. A cow may drink 25 gallons when she needs only 10 or 15 gallons, the thirst sensation being stimulated by a dry gullet. Generally, though, stock should be allowed to drink as much water, as they desire.

If a cow's water intake is restricted, she will show signs of



A long and narrow trough like this has an advantage over a shorter one of greater capacity in that more cows can drink at once and "boss" cows are less able to stand sentinel over it. However, the long trough may need a larger supply pipe to keep pace with the number of cows that can drink simultaneously.

physical distress, and among the first of these is reduced milk production, since water forms about 87 per cent of the milk she produces.

SOURCE OF SUPPLY

An ideal supply for the cows is one obtained from a running stream, spring, bore or fenced-off dam, laid on to all paddocks through a pipe system to troughs. In this way feed and water are always situated close together. This avoids loss of grazing time and loss of energy expended in travelling between the two.

The storage should be fenced off from stock to prevent them churning up the mud and putrefying the water. Cows wading in their drinking water can carry harmful bacteria back to the shed, which could become a source of contamination to milk and cream supplies.

Stagnant water is not a suitable source as it often contains parasitic larvae, disease germs and harmful organic matter. If such water has to be used, lime should be thrown into the dam or water hole to precipitate most of the organic matter and cleanse the water.

Water is generally cheap and abundant, and possibly this accounts for the casual attention it sometimes receives. It is simply good stockmanship to ensure that adequate quantities of clean drinking water are available to dairy cattle so they can produce a maximum amount of milk. §

(Continued from page 26)

ing to excessive readings as a result of overflow from the evaporation pad.

Use of a corrosion resistant paint in the storage tank will reduce this problem also, but it is probably good practice to dismantle the device and clean it out once a month.

SOURCE OF SUPPLY

The Research Farm instrument was imported direct from the manufacturer at a cost of £14 sterling. A spray irrigator interested in purchasing the instrument could do so through Messrs. Ivan Stebbins and Son Pty. Ltd., of 15-31 Racecourse Road, North Melbourne, who have contact with Messrs. Wright Rain Ltd.

Unlike the gypsum block and tensiometer which are also used to tell when to irrigate, it has the considerable practical advantage that its measurements are in inches of water, and are therefore self-explanatory to the irrigator. §

HARVESTING YOUR MILK CROP

by J. E. GREEN, Dairy Supervisor, Rochester

HOW MUCH MILK ARE YOU LEAVING IN THE UDDERS OF YOUR DAIRY COWS THROUGH LACK OF CORRECT STIMULATION AND COW-MANSHIP ?

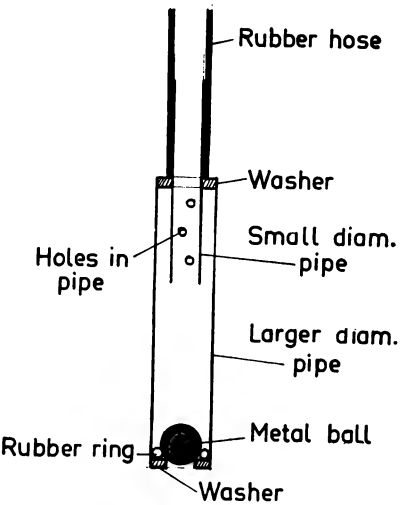
No farmer would dream of harvesting his pasture hay with one sweep missing from the rake. Yet, placing the teatcups on without stimulating the cow's milk let-down, or too long after stimulation, and mishandling the herd, can have a marked effect upon the twice daily butterfat harvest.

Recent and widespread experiments indicate that the length of a cow's lactation is greatly influenced by proper let-down stimulation and management. It is also known that time spent on a 30 second stimulation often saves over one minute in milking time, and produces more milk into the bargain.

A cow is very much a creature of habit. Any alteration to regular routine and rough treatment can shorten the let-down time. The maximum quantity of milk can only be withdrawn from the cow during the let-down period (which varies from cow to cow). Therefore, the fullest co-operation from the cow is vital.

The cow must enjoy being milked or her co-operation can be destroyed.

Convenient shed design, well laid out concrete yards and



An ample supply of clean running water is ideal for udder washing. The "automatic" tap is simple to make and use. It is attached to the lower end of a hose hanging from an overhead pipe line. When the tap is directed towards the udder the ball falls back and allows the water to flow out.

properly planned gates all play an important part. If the environment of the milking shed is such that the milker does not look forward to working in it, then his reactions are soon recognised by the animals he is milking. Repeated disturbances, affecting the cow's nervous sys-

tem will cause her to dry off. This is the cause of many a short season cow.

The milking machines can also vitally affect the harvesting of milk and the health of the herd.

Defective rubberware, unstable vacuum, irregular pulsation rates, and electrical interference are common failings in milking machines. An inefficient machine can readily cause mastitis, upset the contentment of the herd and produce inferior quality milk.

What about starting next season by following these simple recommendations:—

- *Stimulate the cows' udders for 30 seconds, try each quarter into a stripcup and immediately put the teatcups on.*
- *Running water laid on in each bail does not cost much to install and is the best method of cleansing udders.*
- *Handle the herd quietly and confidently, keep to a regular routine, and have your shed and yard system as convenient as possible.*
- *Check up on the efficiency of your machines at regular intervals.*

Why grow good grass, breed good cows and then fail to harvest all the milk the herd is capable of producing?

SORREL AND LIME

It is a common belief that the presence of sorrel in a paddock is a sign that the land needs liming. However, farmers who follow this "rule" are likely to be disappointed.

Mr. J. Hosking, the Department of Agriculture's agrostologist at Warragul says that experience in Gippsland shows that in very few instances will normal dressings of lime eradicate the sorrel.

The key to sorrel control in pastures is to provide a dense and vigorous pasture growth. Better grazing management or better fertiliser treatment is usually needed to encourage stronger pasture to choke out the sorrel. The last dry summer and autumn and resultant overgrazing so weakened Gippsland pastures that sorrel (and other weeds such as capeweed) were able to spread.

Last year sorrel was more obvious in pastures in Gippsland than for some years, and there has been a good opportunity to note the effect of lime on the sorrel in the many district pasture trials.

Lime at one ton to the acre is commonly used in the trials, and the sorrel generally has grown just as well on the limed areas as on the unlimed areas.

In the few trials where liming has resulted in stronger pasture growth (on extremely acid soils), the sorrel has been reduced in density. §

MILKING MACHINE PULSATORS

by H. P. EDGOOSE, B.Agr.Sc., Dairy Husbandry Officer, Warragul

Several main needs must be met in a pulsation system.

- Its action must be regular and constant in each bail and each set of cups.
- We want a pulsator with an exact ratio in each set of cups. This ratio should be 30 : 70, that is, 30 per cent squeeze or air phase and 70 per cent milking or vacuum phase.
- The bail pulsation squeeze should be "gentle" rather than "snappy". This is achieved on the squeeze or air phase by letting the air in slowly. The releaser pulsator should have a very snappy 50 : 50 ratio.
- The pulsation should remain regular and the ratio constant over a long period.

There are three main types of pulsation available to farmers (see illustrations on next page):—

Mechanical Slide Valve;

Mechanical master with relay or "slave" pulsators in the bails;

Electro-magnetic.

In the first instance all these systems are driven from the vacuum pump. Thus, provided the driving mechanism is correctly installed and operated, all should have constant speed.

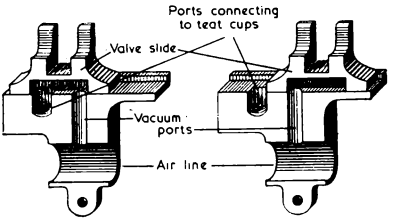
The ratio in the mechanical slide valve is generally determined by individual adjustment of each slide in each bail. In the other two types it is mainly determined by the adjustment of the master pulsator.

Where the master pulsator has a fixed built-in adjustment (some types of electro-magnetic and mechanical relay) the ratio at the bails is also fixed. Slide type pulsators (bail and master) require regular checking to ensure correct ratios.

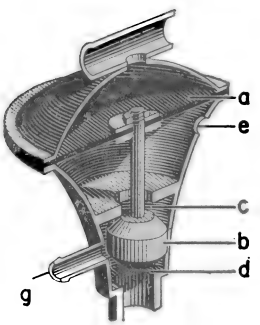
Practically all manufacturers of mechanical relay and electro-magnetic pulsators supply units with a "slow squeeze" action. Most of the manufacturers of slide pulsators supply units with a snappy action. With most slide types it is reasonably easy to alter the bail pulsator to a slow squeeze action, but little interest has been shown in this change.

Reliability must also be considered. When properly installed the mechanical types should be satisfactory. The electro-magnetic pulsators have only recently come back into use and are still in the process of proving themselves in this regard.

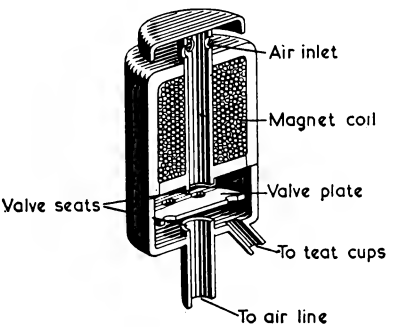
PULSATORS



Simple slide pulsator valve. The left-hand diagram shows the vacuum or release phase when the pulsator lead is connected to vacuum. The right-hand diagram shows the air or squeeze phase. Pulsator ratio is the ratio of the duration of the air or squeeze phase to the duration of the vacuum or release phase.

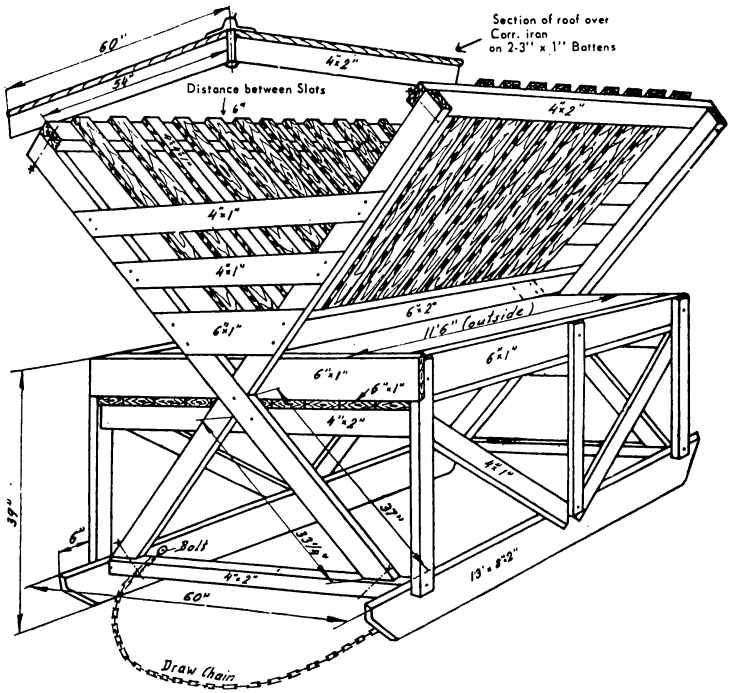


An early diaphragm operated relay pulsator valve. When the vacuum is applied to the control chamber (a) the diaphragm rises bringing the valve (b) against the seat of (c). This connects the teat cups to the vacuum in the air line. When the control line comes to air pressure, the diaphragm falls and valve (b) seats on (d), thus admitting air which comes in through the hole (c) into the cup case.



One type of magnetic pulsator valve. When electric current flows in the coil the valve plate lifts, so connecting the cups to vacuum. When the current ceases the vacuum pulls the valve plate downwards, thus blocking the inlet of the airline and permitting air pass into the cup cases or control line. This valve requires direct current.

Although occasional reference to trade names and proprietary products may be inevitable in this Digest, no endorsement of these products is intended, nor is any criticism implied of similar products which are not mentioned.



EASILY MOVED HAY RACK

The feeding rack illustrated can be drawn to a fresh site by a farm vehicle when the ground becomes cut up by the feet of animals.

A saving in feed is given because a spillage bin catches most of the loose hay which might otherwise be trampled.

The rack should not be used with a horned herd, as the close feeding permits "bossy" animals to do much damage. At least three racks would be required for a herd of 40 cows.

Materials needed to construct the feeding rack taken from "The Agricultural Gazette of New South Wales," March, (1961) are given on the next page.

Timber (277 super feet)

Sled runners	8 x 2	2/13 ft.
Bottom rails of rack	6 x 2	2/12 ft.
Spillage bin	6 x 1	14/12 ft.
Top rails of rack	4 x 2	2/14 ft.
End cross members	4 x 2	4/8 ft.
Braces for slide and tray	4 x 2	6/5 ft.
Corner and centre posts of tray	4 x 2	3/6 ft.
Rack slats 4 ft.	4 x 1	16/8 ft.
Stays	4 x 1	2/12 ft.
Rack dividers	3 x 1	4/12 ft.

Nails		**Bolts**	
2½ in.	1½ lb.	6½ x ½	4
2 in.	1½ lb.	5 x ½	12
4 in.	1½ lb.	2½ x ½	2
		4 x ½	2

Material for gable roof — Timber (54 super feet)

Rafters	4 x 2	10/5 ft.
Ridge	6 x 1	1/14 ft.
Battens	3 x 1	4/14 ft.

Galvanised corrugated iron

26 gauge, 10 ft. lengths, 7 sheets to be cut in halves to make 14 sheets.

Ridge capping

6 ft. x 14 in. x 26 gauge, 3 lengths.
Springheaded nails, 2 lb.

To stop cows tugging layers of baled hay through the slats two 2 in. x 1 in. battens spaced 11 in. apart are placed across the slats inside the rack. Lengths of heavy-gauge fencing wire similarly placed would serve the same purpose. §

BULK MILK QUALITY

by J. E. GREEN, Dairy Supervisor, Rochester

THE STORAGE OF MILK IN REFRIGERATED BULK VATS on the farm and its transport to the depots in tankers is a big improvement on the water cooling and can handling system that it is rapidly replacing.

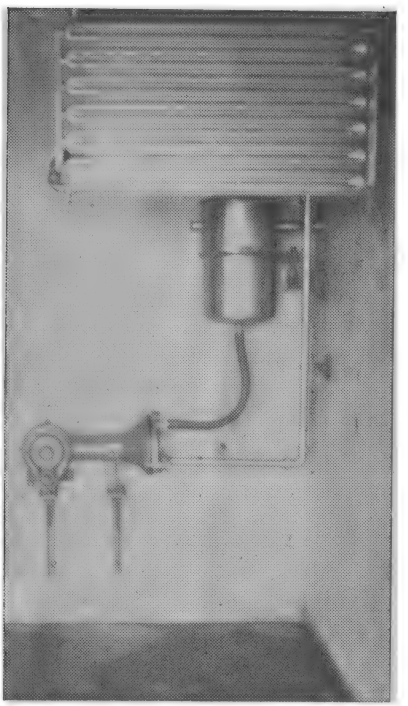
But as milk from a number of farms is mixed in the one tanker, strict attention to hygiene is necessary.

The milk in any one tanker, provided it has passed the senses test of the grader-driver, is only as good as that of the worst supplies.

Twice in every 10 day period, the factory does a methylene blue test of a sample from each supplier's milk. If this fails, the weak member of the group can promptly be located.

Provided all other aspects of dairy hygiene are being observed,* a simple and effective method of producing good quality milk under refrigeration methods is as follows:—

HAVE A CLEAN WATER SUPPLY under pressure conveniently situated at the dairy so all milk can be rinsed from the vat immediately after collection. Then clean the vat by placing a plastic or rubber bucket of warm water and cleanser in the vat, and, using a long handled brush or broom, scrub all the inner surfaces, plus lids and under the bridge. Remove the agitator and dip stick and dismantle the tap for cleansing. Contamination is likely to occur under the bridge



A diaphragm pump which is not dismantled frequently for thorough cleaning can undo all the good work and time put into keeping milking machines and bulk vat in perfect, hygienic condition.

of the vat and in the tap since these are less accessible than other parts and are less easily seen. After cleaning, rinse with water, close the lids and leave to drain.

JUST BEFORE MILKING the vat must be sterilised with a recommended sterilant. Many farmers in the Rochester district, where bulk milk collection is now commencing its fifth season, claim good results with the use of an idophor as a steriliser. This contains acid which tends also to prevent the development of milkstone. This steriliser can be first drawn through the milking machines and into a plastic or rubber bucket. This is then placed in the bulk vat and the whole of the inner walls brushed. Allow to drain, close the lids and the vat is ready to receive milk. The remaining steriliser can be topped up and used to dip teatcups.

NEVER USE STEEL WOOL to clean the vat, as tiny particles of steel adhere to the walls and can cause rust spots.

NEVER GET INTO THE VAT to clean it, as this can damage its polished surface.

TEMPERATURE IS ALSO IMPORTANT in producing a good quality bulk milk. The night's milk temperature must be reduced to 40 deg. F as quickly as possible. This milk, which is at a low temperature when the morning milking begins, helps cool the incoming warm milk. The overall temperature of the blended milk should not rise above 60 deg. F. If this happens, milk quality could be affected.

Proper cleaning and sterilising of a bulk milk vat is a very simple task, and is essential if we are to get the full benefit in quality that farm refrigeration and bulk collection of milk can give the industry. §

*On farms where pre-cooling of milk is used in conjunction with bulk vats, and a diaphragm pump installed to lift the milk, it is very important that this piece of equipment be cleaned immediately after use. Failure to do this (when paddock work is waiting, perhaps) may undo all the good work put into cleaning milking machines and bulk vat.

DAIRYING AT LEONGATHA

THE GROWTH OF THE DAIRYING INDUSTRY IN THE LEONGATHA AREA over the past nine years has been revealed in figures recently released by the local dairy supervisor, Mr. R. Leslie.

Although the number of dairy farms in his supervision area has increased by only 26 the dairy cow population has risen by over 8,300 !

The average number of milking cows carried on each farm was 44 in 1952/53, and has now risen to 58 cows in 1961/62.

In 1953/54 an average of 3.8 acres were used to run one milking cow. Today the carrying capacity has increased so that, on average, a milking cow is carried on each 3 acres.

Replacement stock are, of course, carried in addition to milking cows on these areas. §

• *Do it yourself*

MAKE A SILAGE BARRIER

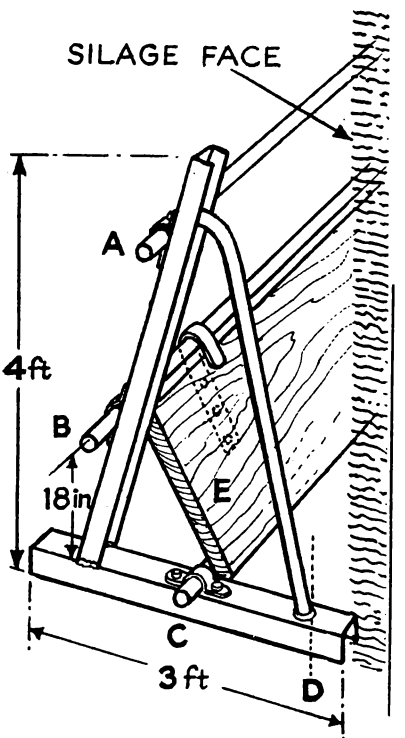
A barrier becoming more and more popular for self-fed silage in some parts of England, is designed so that it can be dismantled at the end of the winter and so that it can be altered or adjusted to suit animals of any breed or size merely by changing the positions of bars A and B (see diagram).

The novel feature is the manger effect gained by hanging the board front E on to the bar B and resting it on the tie bar at C.

This board goes the whole length of the silage face with a hook every 5 ft or so. The hooks must be substantial and fit snugly to the bar to avoid chafing the cows' briskets.

The main triangular frames are made from fairly heavy channel iron and the back supporting stay of 1¼ in. iron piping. These frames should be 10 ft. to 12 ft. apart and when the bars A, B and C are made from 1½ to 2 in. piping and clamped tight the whole thing is rigid and will stand up to any amount of buffeting by cattle.

The bars A, B and C should be cut into convenient lengths for handling and can be joined with sleeves of a slightly bigger piping slid over the joint.



If the bar B is bruising the cows' briskets, there are two possible remedies. The bar can be moved to the back of the main support using longer bolts and a block of wood in the channel (this has the same effect as slightly lowering it) or the base

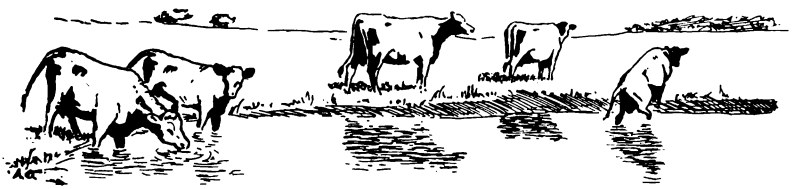
can be cut shorter at D. Both these measures allow the cow a little nearer the silage face.

The bar A should be just below the top level of the cows' shoulders to make sure that they are not tempted to feed with their front feet in the manger.

Any silage dropped from the cows' mouths falls into the trough formed by the detachable boarded front, the floor and the silage face and can be picked up again unsoiled instead of being dragged back into the muck by the front feet.

When necessary, the barrier can be moved up each day by using a crowbar under the front of the base channel iron, but in practice, feeding keeps it pushed up to the silage.

With this barrier, self-feeding is a clean, tidy job and, almost as important, a comfortable one for the cows. §



SPREADABILITY OF BUTTER

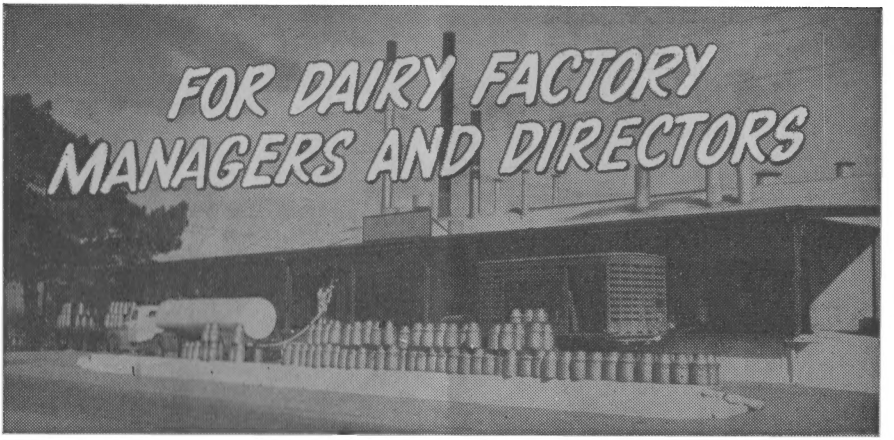
New Technique to be Used at Werribee

The Department of Agriculture has commenced investigations into the spreadability of butter as part of the Australian Dairy Produce Board's research and promotion scheme. Mr. B. D. Dixon at the School of Dairy Technology, Werribee, is the Dairy Research officer in charge of the project.

Recently Mr. Dixon spent three months at the Engineering School of the University of Melbourne, where he tested the physical properties of butter under pressure from three directions in triaxial compression apparatus. This is a normal technique in soil testing.

At present, the hardness of butter is studied by means of an instrument which measures the force to extrude butter through a hole. This method does not give as much information as will triaxial compression apparatus.

The next stage of the project will be to study how variations in the cream processing and butter making conditions affect the spreadability of butter.



FLY CONTROL IN DAIRY FACTORIES

by B. D. HANNAFORD, R.D.D., Cheese Instructor

The Department of Agriculture requires that all dairy manufacture rooms be fitted with self-closing fly screen doors or fly locks at all entrances. Windows and ventilators which can be opened are required to be fitted with fly screens.

Factory managers are urged to instruct personnel in fly control with special reference to:

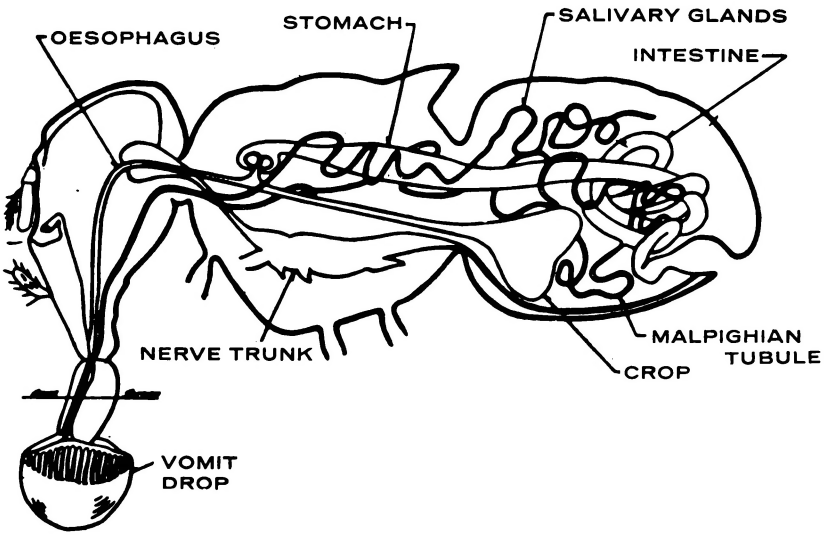
- *The removal of rubbish or litter from the factory surroundings.*
- *The maintenance of drains and soakage areas.*
- *The treatment of any likely breeding grounds within the vicinity of the factory.*
- *The regular use of fly lures.*

Flies are best controlled at their breeding grounds, as the life cycle of the fly from the egg to the adult insect takes from 10 to 14 days.

Factory drains, soakage areas and rubbish heaps are breeding areas and should be regularly attended and treated with insecticides.

The use of insecticides inside the factory is not recommended because of the danger of insecticide contamination of the product manufactured. Certain overseas markets require that dairy produce purchased by them be free of any residual insecticide.

A recent development in fly lures suitable for dairy factory surroundings is a unit called an Insect-o-cutor (trade name). The unit consists of a grid of electrically charged wires and black light fluorescent tubes. Flies and other insects find the short wave length black light compelling and fly towards it, meeting instant death on the grid. The



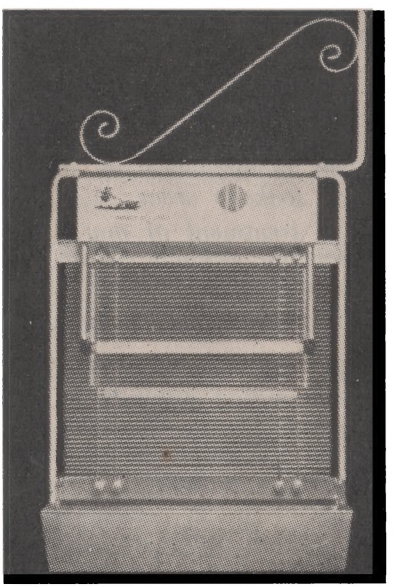
When feeding on meat, bread, or sugar, flies eject a fluid to dissolve the food before sucking it up. In this way they contaminate food by transferring bacteria from garbage and filth.

dead flies and insects fall to the ground or into collection trays.

Some of the advantages claimed for the unit are that flies cannot develop an immunity towards electricity and that units work 24 hours a day, require little maintenance and are completely safe if touched by humans or birds.

Lures such as fly cakes or fly bait in powder form have been found to give good control if attended to regularly.

To conclude, since prevention is the best cure, fly control is best when the breeding areas are eliminated. §



The Insect-O-Cutor, which draws flies to it, and electrocutes them. It is harmless to birds and human beings. The ideal distance is 30 feet from the area to be protected.

OFFICERS ABLE TO ASSIST FARMERS

NORTH AND NORTH-EAST

Senior Dairy Supervisor: G. R. B. George, State Public Offices, Bridge-street, Benalla West (Benalla 155).

Dairy Supervisors: A. Laing, Public Offices, Wangaratta (Wangaratta 2463); H. J. Bowditch, Kancoona, via Wodonga (Kancoona 5); G. A. Crichton, 50 Coster-street, Alexandra (Alexandra 173); C. H. Foster, Cobram P.O. (Cobram 314); E. J. Bradbrook, Public Offices, Wangaratta (Wangaratta 2463); R. H. Kline, Tarcombe-street, Euroa (Euroa 161); C. McNamara, 27 Dunrobin-street, Shepparton (Shepparton 3296); D. J. Paul, Tallangatta (Tallangatta 152); A. E. Cullen, Katamatite-road, Numurkah (Numurkah 447); K. A. Calder, Wyndham-street, Shepparton (Shepparton 2339); R. B. Gibson, 192 High-street, Wodonga (Wodonga 510); W. A. Drake, State Public Offices, Bridge-street, Benalla West (Benalla 155).

Dairy Husbandry Officer: J. R. Telford, Dept. of Agr., Tallangatta (Tallangatta 152).

Herd Test Organiser: E. Blake, Public Offices, Wangaratta (Wangaratta 2463).

Veterinary Officers: P. J. Kinnaird, Box 259, Shepparton (Shepparton 3180); R. P. Herd, State Public Offices, Bridge-street, Benalla West (Benalla 155).

Stock Inspectors: C. R. Preston, Box 259, Shepparton (Shepparton 3180); G. R. Bell, District Agricultural Centre, Cobram; B. Cox, Department of Agriculture, 192 High-street, Wodonga (Wodonga 510); J. C. Morgan, Towong-street, Tallangatta East (Tall. 152); P. Pratt, 40 Downey-street, Alexandra (Alex. 872); P. J. Paterson, Dept. of Agr., Murphy-street, Wangaratta (Wangaratta 2463).

District Agricultural Officers: J. McColl, Melville-street, Numurkah (Numurkah 398); J. Avery, Binney-street, Euroa (Euroa 161).

Rutherglen Research Station: J. G. Bath, Manager.

Agrostologist: I. H. Cameron, Rutherglen Research Station, Rutherglen.

Agricultural Extension Officer: R. Hogg, Dept. of Agr., Tallangatta (Tallangatta 152).

SOUTH GIPPSLAND

Senior Dairy Supervisor: G. Berryman, 61 Roughead-street, Leongatha (Leongatha 263);

Dairy Supervisors: C. F. Baxter, Box 49, Korumburra (Korumburra 301); V. G. Broom, Box 15, Korumburra (Korumburra 328); R. J. Staple, Box 114, Yarram; G. A. Mortimer, 48 Graham-street, Wonthaggi (Wonthaggi 168); R. H. Leslie, 9 O'Neil-street, Leongatha (Leongatha 543); A. W. Humphrey, P.O., Foster (Foster 196); A. Rawlinson, P.O., Mirboo North (Mirboo North 189).

Herd Test Organiser: J. R. Grimes, 6 Hassett-street, Leongatha (Leongatha 523).

Stock Inspectors: W. S. Howell, Yarram-street, Yarram (Yarram 112); W. Powell, Department of Agriculture, Leongatha (Leongatha 262); L. Moore, 28 Cameron-street, Wonthaggi (Wonthaggi 490).

Veterinary Officer: C. R. Bassett, Dept. of Agriculture, Leongatha (Leongatha 262).

Agricultural Extension Officer: D. J. Bissett, Dept. of Agriculture, Leongatha (Leongatha 262).

WEST GIPPSLAND

Senior Dairy Supervisor: H. H. Pedersen, "Oban", Tarago (Tarago 2).

Dairy Supervisors: D. K. McCrum, 59 King-street, Dandenong (Dand. 79 21125); W. J. Buntine, P.O. Box 121, Warragul (Warragul 21228 and 21229); J. W. Masters, Box 51, Frankston (Frankston 3 3866); J. F. Oliver, Bennett-street, Drouin (Drouin 28); N. A. Williamson, Kokoda-street, Warragul (Warragul 21589); J. C. Davies, 14 Fairchild-street, Drouin (Drouin 5 1582); W. K. Taskis, 29 Main-street, Pakenham East (P.E. 105); M. C. Martin, 2 Sybella-avenue, Koo-Wee-Rup (KWR 100).

Senior Herd Test Organiser: J. L. Fry, Dept. of Agr., Treasury Gardens, Melbourne (63 0321, ext. 519).

Dairy Husbandry Officer: H. P. Edgoose, District Agricultural Centre, Warragul (Warragul 21228 and 21229).

Veterinary Officer: D. McQueen, District Agricultural Centre, Warragul (Warragul 21228 and 21229).

Stock Inspector: N. J. Wright, District Agricultural Centre, Warragul (Warragul 21228 and 21229).

Agrostologist: W. J. Hosking, District Agricultural Centre, Warragul (Warragul 21228 and 21229).

Agricultural Extension Officer: B. Bardsley, District Agr. Centre, Warragul (Warragul 21228 and 21229).

Ellinbank Dairy Research Station: A. Doery, Manager (Warragul South 209).

EAST GIPPSLAND

Senior Dairy Supervisor: A. L. Laidlaw, Dept. of Agr., Macallister Court, Macallister-street, Sale (Private Phone, Sale 2952).

Dairy Supervisors: E. J. Bullock, Department of Agriculture, 39 Service-street, Bairnsdale (Bairnsdale 338); J. W. Lumsden, 9 Loch Park-road, Traralgon (Traralgon 214); R. J. McLaren, Carpenter-street, Maffra (Maffra 195); R. W. D. Clulow, Evans-street, Trafalgar (Trafalgar 323); D. J. Sheers, Sale Hotel, Sale; F. P. Touzel, 5 Savige-street, P.O. Box 344, Morwell; H. Isakson, Orbost P.O. (Orbost 95).

Herd Test Organiser: J. Darley, 41 Barkly-street, Sale (Sale 733).

Veterinary Officer: D. Hore, District Agricultural Centre, Bairnsdale (Bairnsdale 338).

Stock Inspectors: G. Eadie, District Agricultual Centre, Bairnsdale (Bairnsdale 338); J. Lancaster, 52 Desailly-street, Sale (Sale 944).

District Agricultural Officer: F. Drake, 39 Service-street, Bairnsdale (Bairnsdale 338).

Field Agrostologist: B. C. Curnow, 39 Service-street, Bairnsdale (Bairnsdale 338).

Irrigation Research Officer: Ian Norman, 23 Powerscourt-street, Maffra (Maffra 192).

(Officers in other districts will be listed in our next issue.)

NEW PRICES PAID FOR IDENTICAL TWIN HEIFER CALVES OF DAIRY BREEDING

★

Prices Paid:—

£17/10/- per pair from 1st June to 30th September.

£25 per pair for remainder of year.

3/- per day for keep from birth to delivery to the Department.

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Premium payments for calves from herd tested cows over 250 lb. butterfat.

★ ★ ★

EXPERIMENTS USING IDENTICAL TWINS ARE NOW BEING CARRIED OUT AT:—

Ellinbank Dairy Research Station

Rutherglen Research Station

and

Animal Husbandry Research Centre, Werribee.

★ ★ ★

Collections from all major dairying districts.

If you have twin heifer calves which look identical, get in touch with your local Department of Agriculture Veterinary Officer, Stock Inspector or Dairy Supervisor.

See inside back cover this and the previous issue for addresses of these officers.

Printed by The Premier Printing Co. Pty. Ltd.,
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